



## wwPDB EM Validation Summary Report ⓘ

Nov 20, 2022 – 09:55 am GMT

PDB ID : 6HTQ  
EMDB ID : EMD-0270  
Title : Stringent response control by a bifunctional RelA enzyme in the presence and absence of the ribosome  
Authors : Wilson, D.N.; Abdelshahid, M.  
Deposited on : 2018-10-04  
Resolution : 4.50 Å(reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

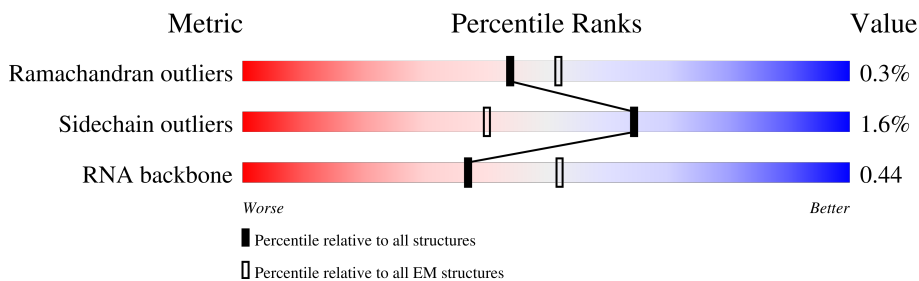
EMDB validation analysis : 0.0.1.dev43  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.2

# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:  
*ELECTRON MICROSCOPY*

The reported resolution of this entry is 4.50 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



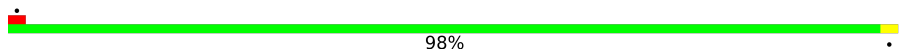
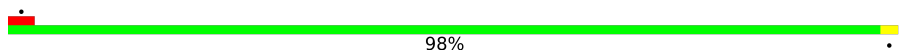
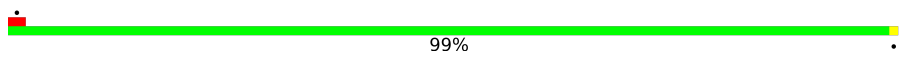
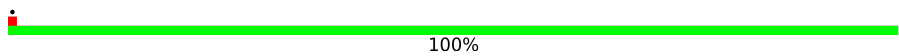
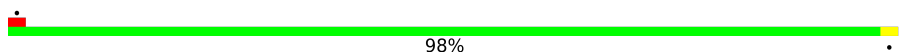
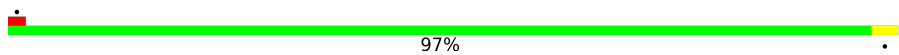
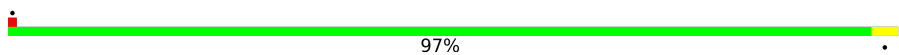
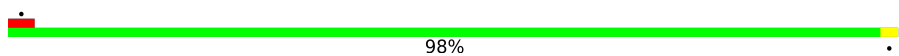
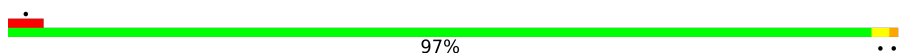
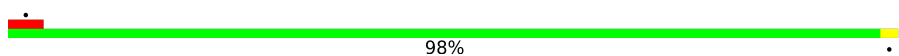

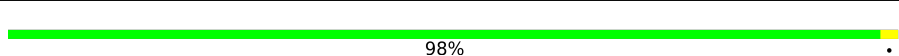
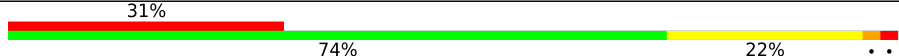
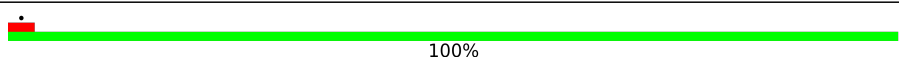
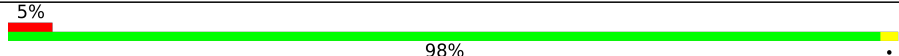
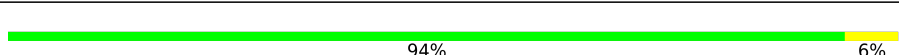

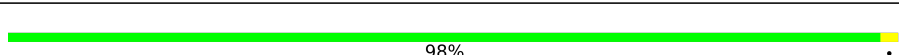
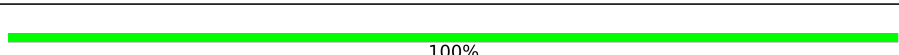
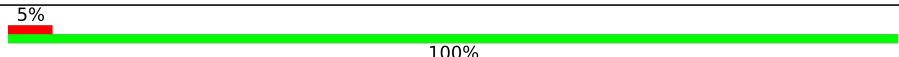
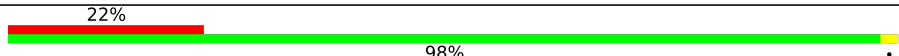

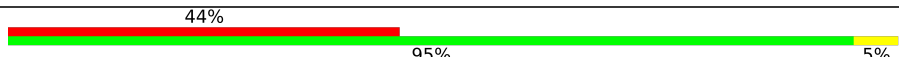
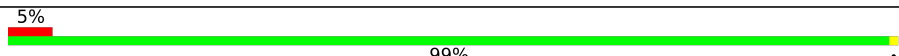
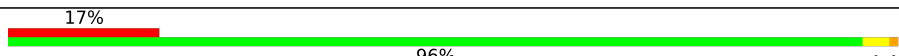
Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	2925	
2	B	112	
3	C	272	
4	D	206	
5	E	205	
6	F	176	
7	G	175	
8	J	142	

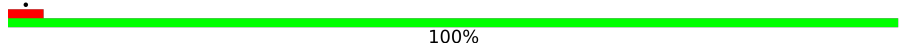
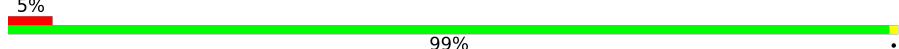
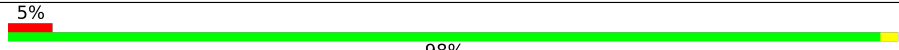
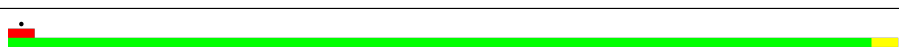
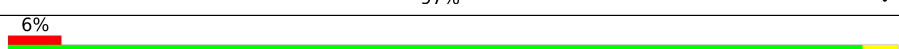
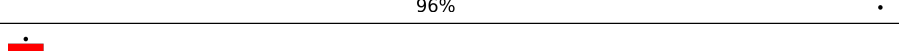
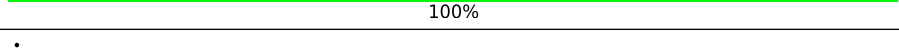
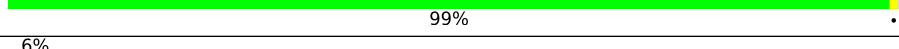
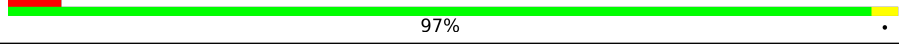
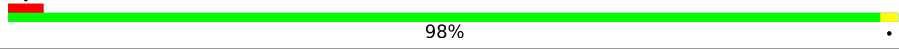
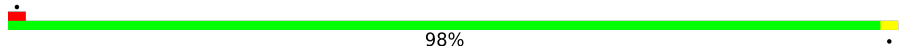
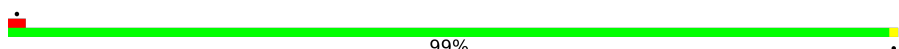
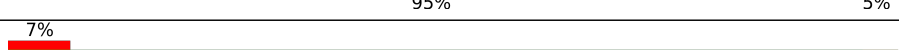

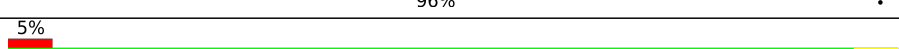
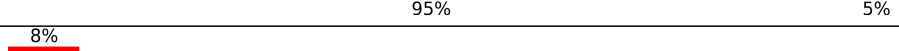
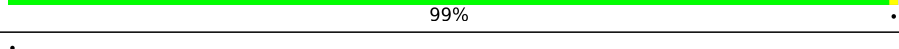
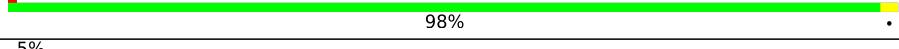

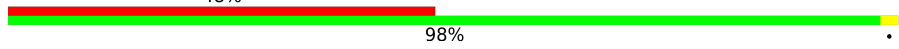
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Mol	Chain	Length	Quality of chain
9	K	122	 98%
10	L	146	 98%
11	M	135	 99%
12	N	119	 100%
13	O	120	 98%
14	P	115	 97%
15	Q	117	 97%
16	R	101	 98%
17	S	109	 97%
18	T	90	 98%
19	U	101	 7% 100%
20	V	82	 98%
21	W	58	 31% 74% 22%
22	X	65	 100%
23	Y	58	 5% 98%
24	1	54	 94% 6%
25	2	48	 6% 100%
26	3	44	 98%
27	4	64	 100%
28	5	37	 5% 100%
29	Z	63	 22% 98%
30	a	1533	 72% 27%
31	b	218	 44% 95% 5%
32	c	206	 5% 99%
33	d	195	 17% 96%

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Mol	Chain	Length	Quality of chain
34	e	164	 100%
35	f	92	 5% 99%
36	g	149	 5% 98%
37	h	131	 97%
38	i	125	 6% 96%
39	j	95	 100%
40	k	114	 99%
41	l	136	 6% 97%
42	m	108	 98%
43	n	60	 98%
44	o	85	 99%
45	p	88	 11% 95% 5%
46	q	84	 7% 96%
47	r	64	 5% 95% 5%
48	s	78	 8% 99%
49	t	83	 98%
50	v	87	 5% 74% 26%
51	x	341	 48% 98%
52	u	76	 8% 57% 42%
53	w	75	 29% 63% 35%

## 2 Entry composition

There are 53 unique types of molecules in this entry. The entry contains 146680 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	2887	61997	27661	11460	19992	2884	0	0

- Molecule 2 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	112	2392	1068	435	778	111	0	0

- Molecule 3 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	272	2083	1296	408	373	6	0	0

- Molecule 4 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	206	1569	985	289	290	5	0	0

- Molecule 5 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	205	1561	980	289	290	2	0	0

- Molecule 6 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	176	1386	882	241	256	7	0	0

- Molecule 7 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	175	1342	835	248	257	2	0	0

- Molecule 8 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	J	142	1123	710	206	202	5	0	0

- Molecule 9 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	K	122	920	571	173	172	4	0	0

- Molecule 10 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	L	146	1081	671	207	201	2	0	0

- Molecule 11 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	M	135	1076	690	205	176	5	0	0

- Molecule 12 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	N	119	953	583	186	180	4	0	0

- Molecule 13 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	O	120	912	564	176	171	1	0	0

- Molecule 14 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	P	115	944	600	185	158	1	0	0

- Molecule 15 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	Q	117	940	591	189	156	4	0	0

- Molecule 16 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
16	R	101	786	501	139	146	0	0

- Molecule 17 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	S	109	842	525	164	150	3	0	0

- Molecule 18 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	T	90	725	452	134	136	3	0	0

- Molecule 19 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	U	101	762	478	142	138	4	0	0

- Molecule 20 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
20	V	82	630	390	123	117	0	0

- Molecule 21 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	W	58	Total	C	N	O	S	0	0
			444	275	92	75	2		

- Molecule 22 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	X	65	Total	C	N	O	S	0	0
			530	328	102	98	2		

- Molecule 23 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	Y	58	Total	C	N	O	S	0	0
			455	281	89	84	1		

- Molecule 24 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	1	54	Total	C	N	O	S	0	0
			426	262	86	71	7		

- Molecule 25 is a protein called 50S ribosomal protein L33 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	2	48	Total	C	N	O	S	0	0
			401	244	80	73	4		

- Molecule 26 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	3	44	Total	C	N	O	S	0	0
			367	222	89	54	2		

- Molecule 27 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	4	64	Total	C	N	O	S	0	0
			512	321	107	82	2		

- Molecule 28 is a protein called 50S ribosomal protein L36.



Mol	Chain	Residues	Atoms					AltConf	Trace
28	5	37	Total	C	N	O	S	0	0
			296	186	60	45	5		

- Molecule 29 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Z	63	Total	C	N	O	S	0	0
			499	312	91	91	5		

- Molecule 30 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	a	1533	Total	C	N	O	P	0	0
			32891	14667	6034	10657	1533		

- Molecule 31 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	b	218	Total	C	N	O	S	0	0
			1757	1119	309	323	6		

- Molecule 32 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	c	206	Total	C	N	O	S	0	0
			1619	1011	304	301	3		

- Molecule 33 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	d	195	Total	C	N	O	S	0	0
			1568	991	291	284	2		

- Molecule 34 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	e	164	Total	C	N	O	S	0	0
			1218	767	225	224	2		

- Molecule 35 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	f	92	Total	C	N	O	S	0	0
			755	476	132	146	1		

- Molecule 36 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	g	149	Total	C	N	O	S	0	0
			1181	740	220	215	6		

- Molecule 37 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	h	131	Total	C	N	O	S	0	0
			1036	655	191	187	3		

- Molecule 38 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	i	125	Total	C	N	O	S	0	0
			966	599	191	175	1		

- Molecule 39 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	j	95	Total	C	N	O	S	0	0
			761	479	139	141	2		

- Molecule 40 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	k	114	Total	C	N	O	S	0	0
			838	516	164	156	2		

- Molecule 41 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	l	136	Total	C	N	O	S	0	0
			1052	653	211	186	2		

- Molecule 42 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms				AltConf	Trace
42	m	108	Total	C	N	O	0	0
			868	534	176	158		

- Molecule 43 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	n	60	Total	C	N	O	S	0	0
			497	317	98	77	5		

- Molecule 44 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	o	85	Total	C	N	O	S	0	0
			710	436	144	129	1		

- Molecule 45 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	p	88	Total	C	N	O	S	0	0
			695	441	128	124	2		

- Molecule 46 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	q	84	Total	C	N	O	S	0	0
			691	435	128	126	2		

- Molecule 47 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	r	64	Total	C	N	O	S	0	0
			518	332	96	88	2		

- Molecule 48 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	s	78	Total	C	N	O	S	0	0
			633	409	112	110	2		

- Molecule 49 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	t	83	Total	C	N	O	S	0	0
			637	390	130	116	1		

- Molecule 50 is a RNA chain called P-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	v	87	Total	C	N	O	P	0	0
			1861	829	333	612	87		

- Molecule 51 is a protein called GTP pyrophosphokinase.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	x	341	Total	C	N	O	S	0	0
			2752	1717	504	524	7		

- Molecule 52 is a RNA chain called A/R-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	u	76	Total	C	N	O	P	0	0
			1623	723	289	535	76		

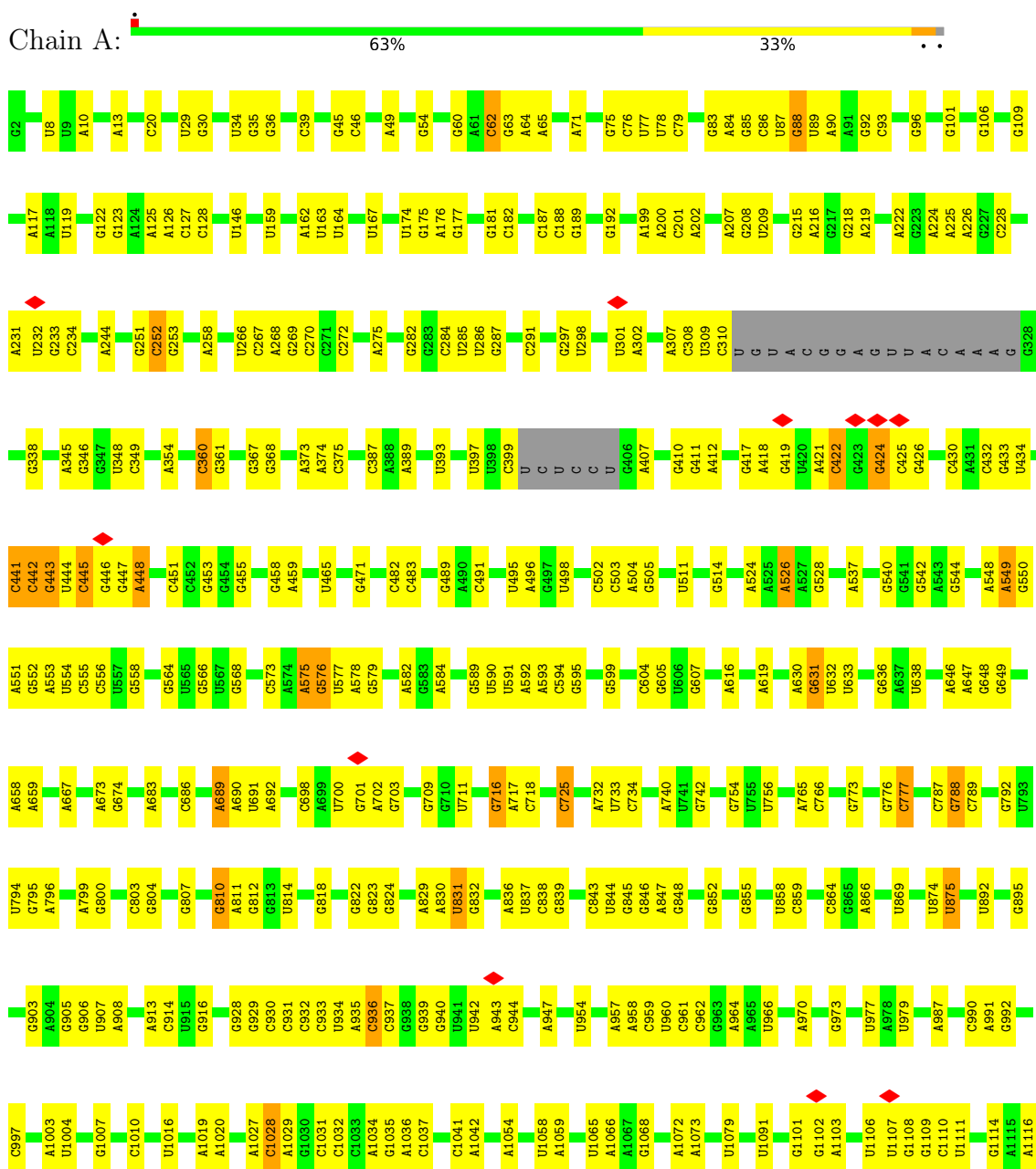
- Molecule 53 is a RNA chain called E-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	w	75	Total	C	N	O	P	0	0
			1599	713	285	526	75		

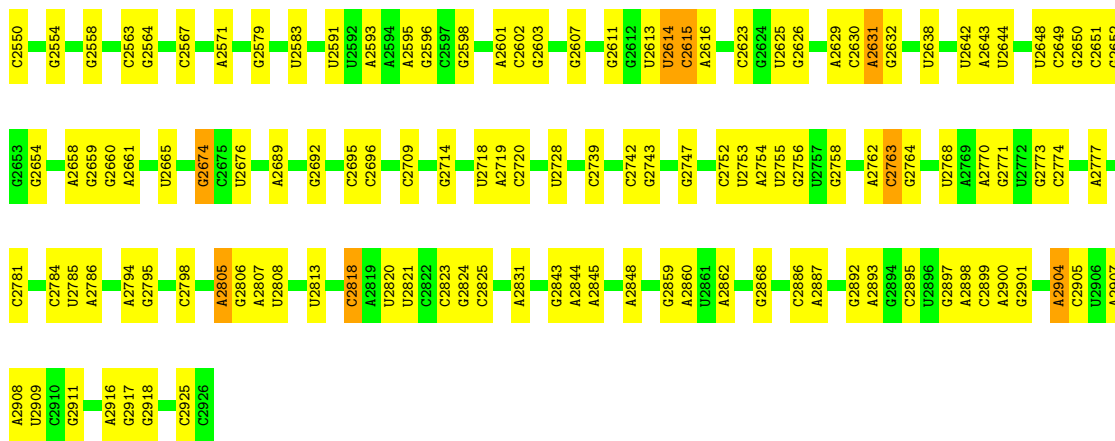
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

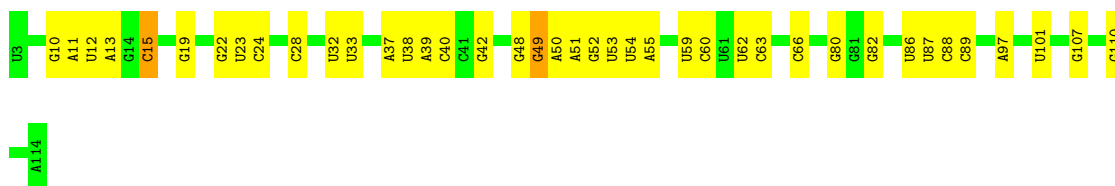
#### • Molecule 1: 23S ribosomal RNA



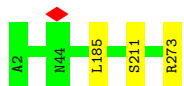




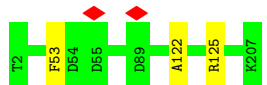
• Molecule 2: 5S ribosomal RNA



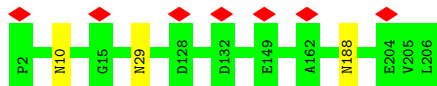
• Molecule 3: 50S ribosomal protein L2



• Molecule 4: 50S ribosomal protein L3



• Molecule 5: 50S ribosomal protein L4

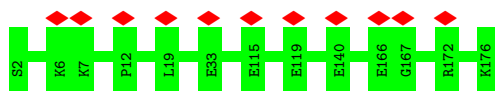


• Molecule 6: 50S ribosomal protein L5





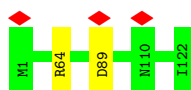
- Molecule 7: 50S ribosomal protein L6



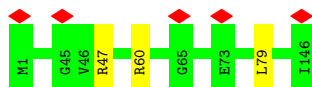
- Molecule 8: 50S ribosomal protein L13



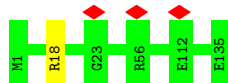
- Molecule 9: 50S ribosomal protein L14



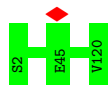
- Molecule 10: 50S ribosomal protein L15



- Molecule 11: 50S ribosomal protein L16



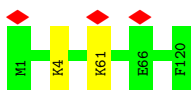
- Molecule 12: 50S ribosomal protein L17



- Molecule 13: 50S ribosomal protein L18

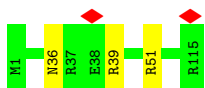


Chain O:  98%



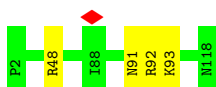
- Molecule 14: 50S ribosomal protein L19

Chain P:  97%



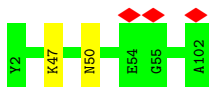
- Molecule 15: 50S ribosomal protein L20

Chain Q:  97%



- Molecule 16: 50S ribosomal protein L21

Chain R:  98%



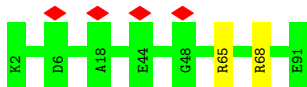
- Molecule 17: 50S ribosomal protein L22

Chain S:  97%



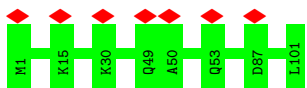
- Molecule 18: 50S ribosomal protein L23

Chain T:  98%

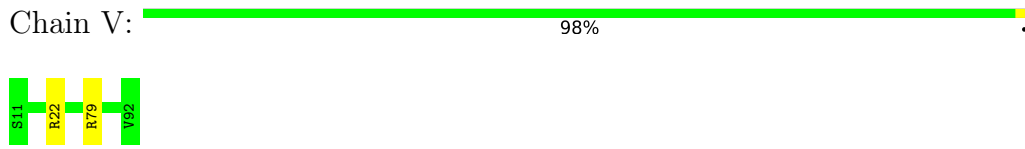


- Molecule 19: 50S ribosomal protein L24

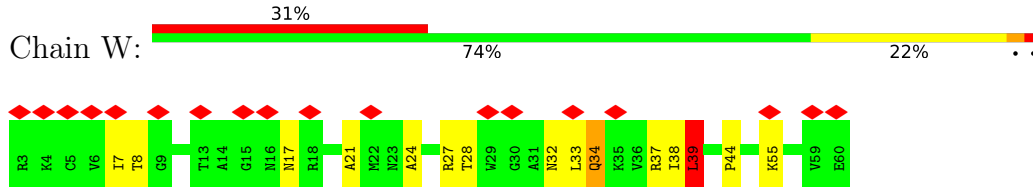
Chain U:  7%  
100%



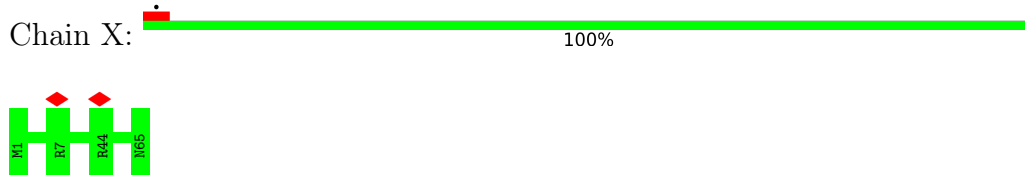
• Molecule 20: 50S ribosomal protein L27



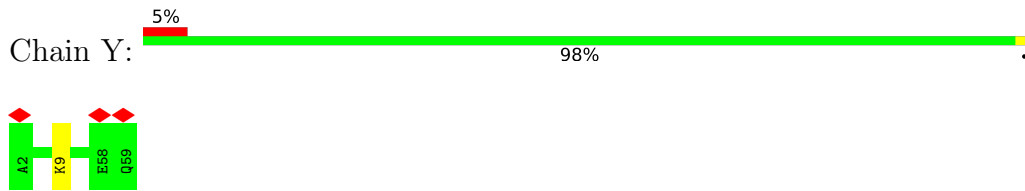
• Molecule 21: 50S ribosomal protein L28



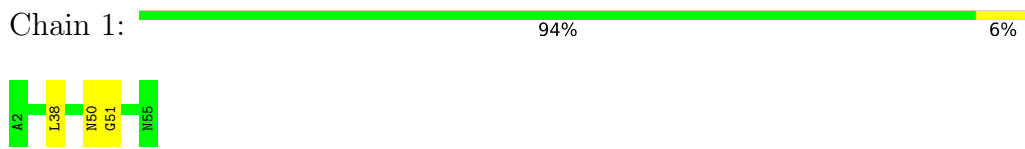
• Molecule 22: 50S ribosomal protein L29



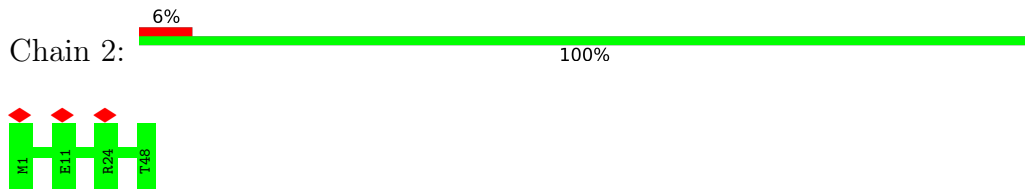
• Molecule 23: 50S ribosomal protein L30



• Molecule 24: 50S ribosomal protein L32

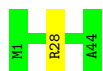


• Molecule 25: 50S ribosomal protein L33 1



• Molecule 26: 50S ribosomal protein L34



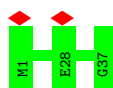


- Molecule 27: 50S ribosomal protein L35

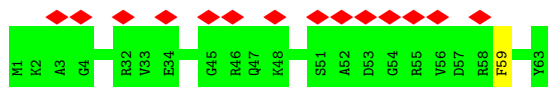


There are no outlier residues recorded for this chain.

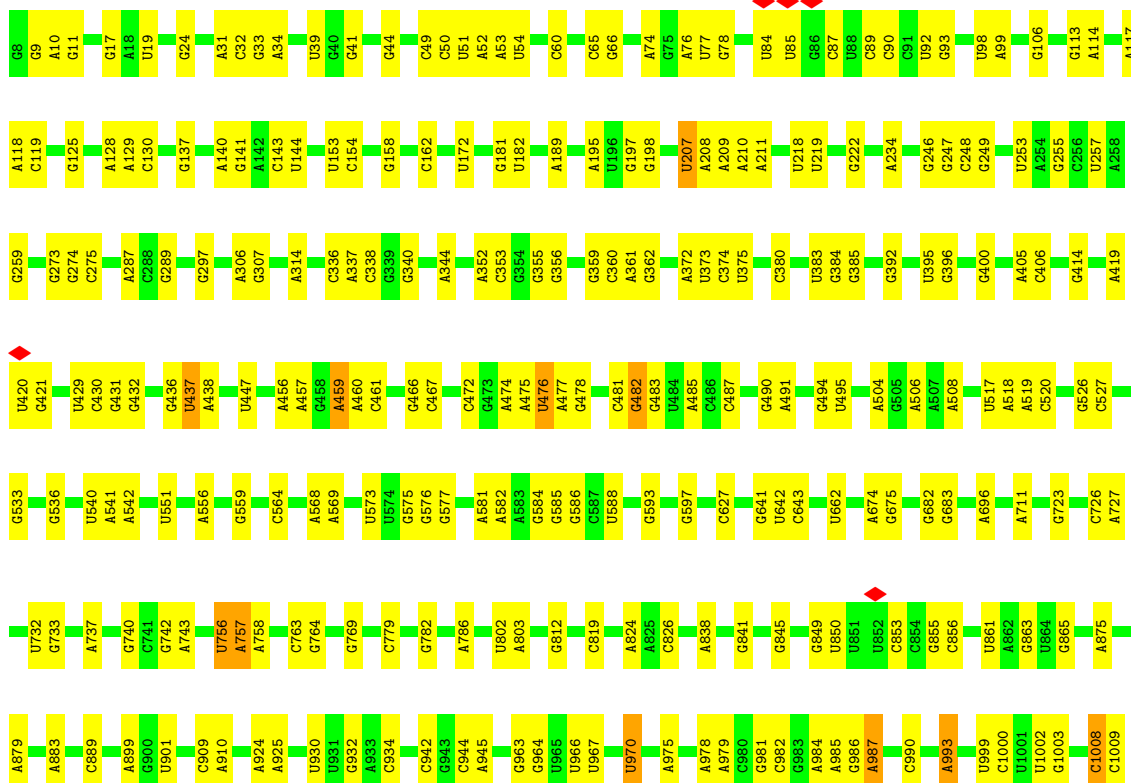
- Molecule 28: 50S ribosomal protein L36

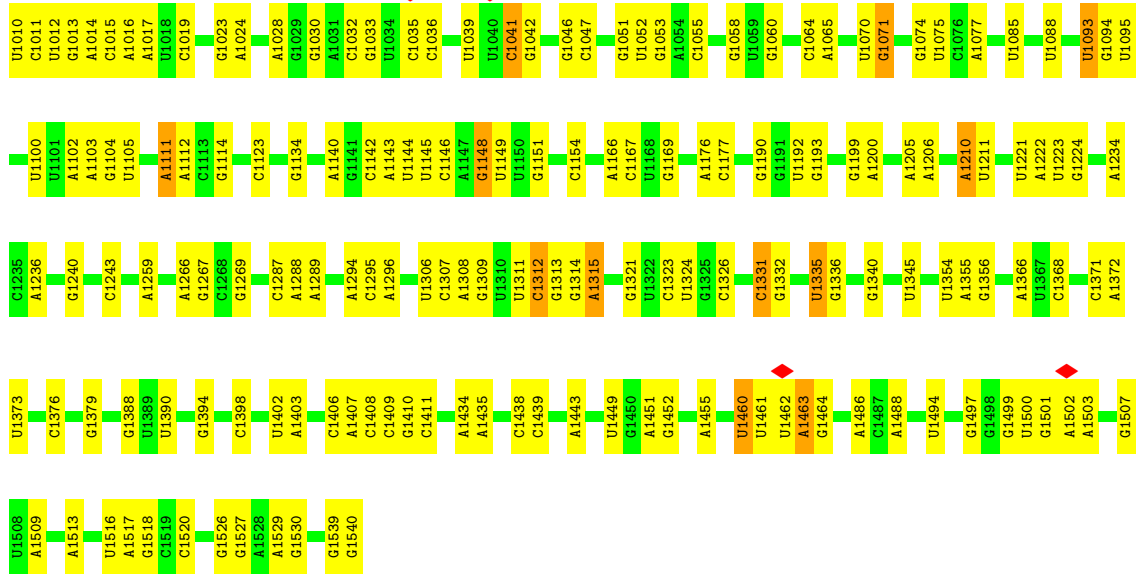


- Molecule 29: 50S ribosomal protein L31

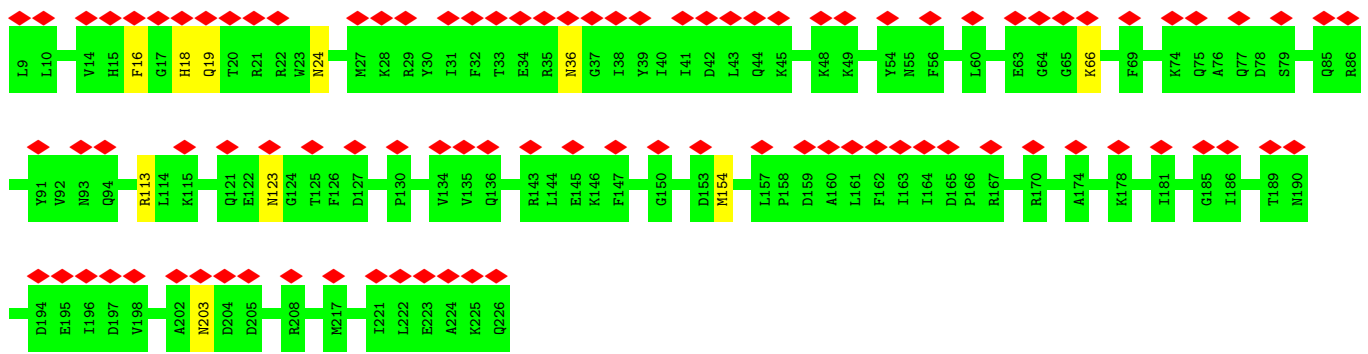
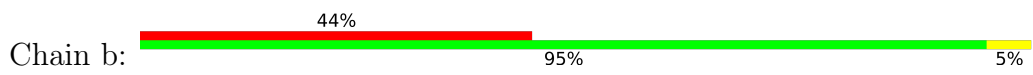


- Molecule 30: 16S rRNA

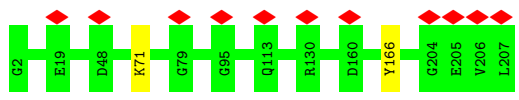




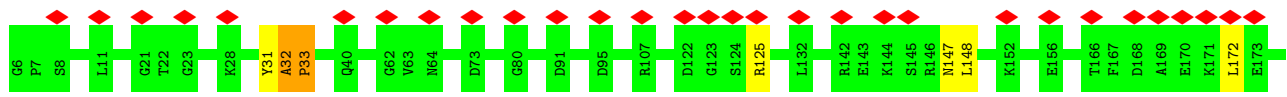
● Molecule 31: 30S ribosomal protein S2

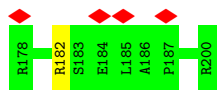


● Molecule 32: 30S ribosomal protein S3

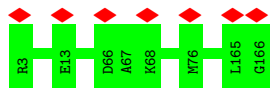


● Molecule 33: 30S ribosomal protein S4

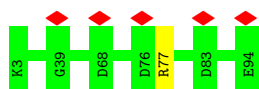




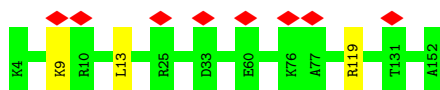
- Molecule 34: 30S ribosomal protein S5



- Molecule 35: 30S ribosomal protein S6



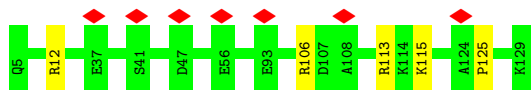
- Molecule 36: 30S ribosomal protein S7



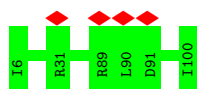
- Molecule 37: 30S ribosomal protein S8



- Molecule 38: 30S ribosomal protein S9

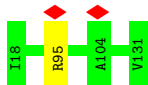


- Molecule 39: 30S ribosomal protein S10



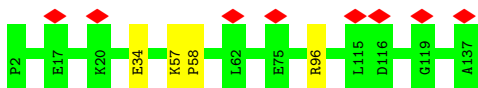
- Molecule 40: 30S ribosomal protein S11

Chain k:  99%



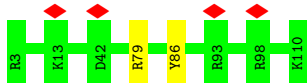
- Molecule 41: 30S ribosomal protein S12

Chain l:  97%



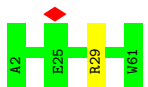
- Molecule 42: 30S ribosomal protein S13

Chain m:  98%



- Molecule 43: 30S ribosomal protein S14

Chain n:  98%

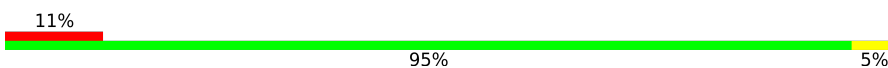


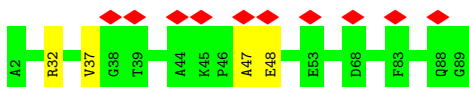
- Molecule 44: 30S ribosomal protein S15

Chain o:  99%



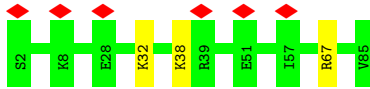
- Molecule 45: 30S ribosomal protein S16

Chain p:  95%

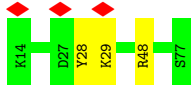
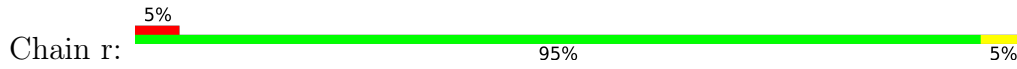


- Molecule 46: 30S ribosomal protein S17

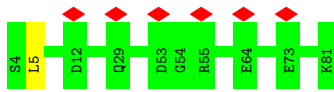
Chain q:  96%



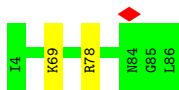
- Molecule 47: 30S ribosomal protein S18



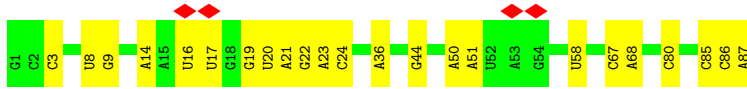
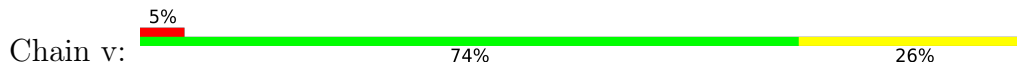
- Molecule 48: 30S ribosomal protein S19



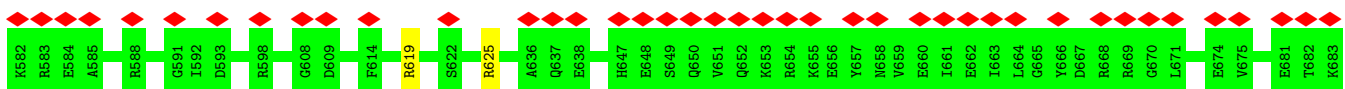
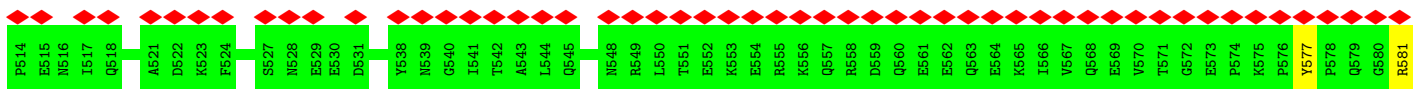
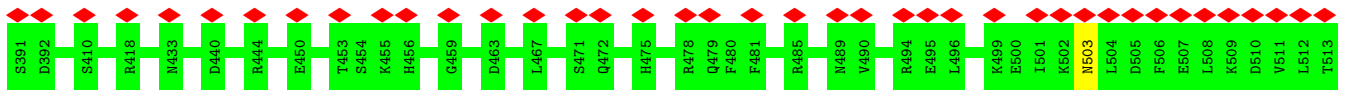
- Molecule 49: 30S ribosomal protein S20

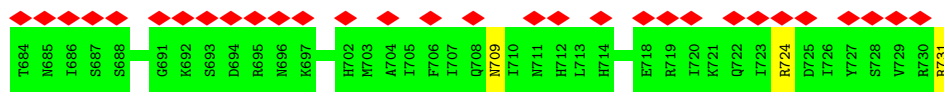


- Molecule 50: P-tRNA



- Molecule 51: GTP pyrophosphokinase

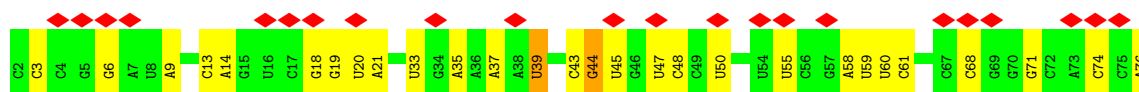




- Molecule 52: A/R-tRNA



- Molecule 53: E-tRNA





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	650054	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	2.4	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.465	Depositor
Minimum map value	-0.311	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.018	Depositor
Recommended contour level	0.0471	Depositor
Map size ( $\text{\AA}$ )	390.24, 390.24, 390.24	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.084, 1.084, 1.084	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	1.01	9/69438 (0.0%)	1.08	261/108311 (0.2%)
2	B	0.41	0/2675	0.97	7/4170 (0.2%)
3	C	0.43	0/2120	0.64	1/2845 (0.0%)
4	D	0.40	0/1591	0.64	0/2132
5	E	0.34	0/1580	0.57	0/2132
6	F	0.30	0/1405	0.60	0/1887
7	G	0.26	0/1360	0.50	0/1832
8	J	0.34	0/1146	0.63	0/1542
9	K	0.42	0/927	0.64	1/1245 (0.1%)
10	L	0.34	0/1093	0.60	2/1457 (0.1%)
11	M	0.35	0/1099	0.51	0/1468
12	N	0.33	0/960	0.60	0/1284
13	O	0.27	0/921	0.57	0/1236
14	P	0.37	0/957	0.61	0/1279
15	Q	0.39	0/952	0.61	0/1266
16	R	0.34	0/797	0.61	0/1070
17	S	0.35	0/851	0.68	1/1146 (0.1%)
18	T	0.31	0/731	0.50	0/974
19	U	0.29	0/772	0.59	0/1032
20	V	0.36	0/638	0.66	0/847
21	W	3.43	2/448 (0.4%)	1.27	4/596 (0.7%)
22	X	0.27	0/531	0.51	0/707
23	Y	0.31	0/457	0.60	0/613
24	1	0.37	0/433	0.63	0/574
25	2	0.32	0/406	0.57	0/540
26	3	0.37	0/370	0.58	0/483
27	4	0.35	0/519	0.58	0/680
28	5	0.31	0/299	0.50	0/393
29	Z	0.30	0/509	0.50	0/678
30	a	0.54	0/36826	0.98	55/57450 (0.1%)
31	b	0.27	0/1782	0.57	0/2392
32	c	0.30	0/1641	0.55	0/2208
33	d	0.32	0/1598	0.59	1/2147 (0.0%)
34	e	0.35	0/1230	0.59	0/1655

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
35	f	0.29	0/766	0.46	0/1031
36	g	0.28	0/1196	0.57	0/1604
37	h	0.33	0/1048	0.59	0/1407
38	i	0.29	0/979	0.60	0/1315
39	j	0.31	0/773	0.58	0/1044
40	k	0.29	0/852	0.54	0/1153
41	l	0.33	0/1069	0.61	0/1435
42	m	0.30	0/873	0.61	0/1166
43	n	0.36	0/507	0.62	0/672
44	o	0.27	0/718	0.53	0/960
45	p	0.31	0/708	0.57	0/950
46	q	0.31	0/699	0.60	0/933
47	r	0.27	0/526	0.54	0/705
48	s	0.31	0/649	0.59	0/872
49	t	0.25	0/639	0.51	0/852
50	v	0.43	0/2080	0.98	3/3242 (0.1%)
51	x	0.28	0/2794	0.55	0/3757
52	u	0.39	1/1813 (0.1%)	0.98	4/2823 (0.1%)
53	w	0.32	0/1786	1.00	7/2782 (0.3%)
All	All	0.76	12/159537 (0.0%)	0.95	347/238974 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
3	C	0	1
4	D	0	2
8	J	0	1
15	Q	0	2
16	R	0	1
17	S	0	1
21	W	0	9
29	Z	0	1
31	b	0	3
32	c	0	1
33	d	0	3
36	g	0	1
37	h	0	1
41	l	0	2
45	p	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
51	x	0	1
All	All	0	31

The worst 5 of 12 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	2120	U	C2-N3	107.16	2.12	1.37
1	A	2120	U	N3-C4	80.91	2.11	1.38
1	A	2120	U	N1-C2	78.44	2.09	1.38
1	A	2120	U	N1-C6	74.52	2.05	1.38
21	W	34	GLN	CD-NE2	71.67	3.12	1.32

The worst 5 of 347 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	445	C	N1-C2-O2	13.25	126.85	118.90
1	A	2079	C	N1-C2-O2	12.62	126.47	118.90
1	A	2260	U	O4'-C1'-N1	11.68	117.54	108.20
1	A	2079	C	N3-C2-O2	-11.21	114.06	121.90
1	A	445	C	C6-N1-C2	-10.54	116.08	120.30

There are no chirality outliers.

5 of 31 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	C	211	SER	Peptide
4	D	122	ALA	Peptide
4	D	53	PHE	Peptide
8	J	132	PRO	Peptide
15	Q	91	ASN	Peptide

## 5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	270/272 (99%)	239 (88%)	31 (12%)	0	100	100
4	D	204/206 (99%)	180 (88%)	24 (12%)	0	100	100
5	E	203/205 (99%)	180 (89%)	23 (11%)	0	100	100
6	F	174/176 (99%)	164 (94%)	10 (6%)	0	100	100
7	G	173/175 (99%)	157 (91%)	16 (9%)	0	100	100
8	J	140/142 (99%)	119 (85%)	19 (14%)	2 (1%)	11	47
9	K	120/122 (98%)	103 (86%)	17 (14%)	0	100	100
10	L	144/146 (99%)	134 (93%)	10 (7%)	0	100	100
11	M	133/135 (98%)	124 (93%)	9 (7%)	0	100	100
12	N	117/119 (98%)	103 (88%)	14 (12%)	0	100	100
13	O	118/120 (98%)	109 (92%)	9 (8%)	0	100	100
14	P	113/115 (98%)	104 (92%)	9 (8%)	0	100	100
15	Q	115/117 (98%)	107 (93%)	7 (6%)	1 (1%)	17	56
16	R	99/101 (98%)	84 (85%)	15 (15%)	0	100	100
17	S	107/109 (98%)	91 (85%)	14 (13%)	2 (2%)	8	41
18	T	88/90 (98%)	86 (98%)	2 (2%)	0	100	100
19	U	99/101 (98%)	87 (88%)	12 (12%)	0	100	100
20	V	80/82 (98%)	66 (82%)	14 (18%)	0	100	100
21	W	56/58 (97%)	34 (61%)	22 (39%)	0	100	100
22	X	63/65 (97%)	60 (95%)	3 (5%)	0	100	100
23	Y	56/58 (97%)	54 (96%)	2 (4%)	0	100	100
24	1	52/54 (96%)	43 (83%)	8 (15%)	1 (2%)	8	41
25	2	46/48 (96%)	41 (89%)	5 (11%)	0	100	100
26	3	42/44 (96%)	40 (95%)	2 (5%)	0	100	100
27	4	62/64 (97%)	58 (94%)	4 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
28	5	35/37 (95%)	33 (94%)	2 (6%)	0	100	100
29	Z	61/63 (97%)	54 (88%)	7 (12%)	0	100	100
31	b	216/218 (99%)	191 (88%)	24 (11%)	1 (0%)	29	68
32	c	204/206 (99%)	183 (90%)	21 (10%)	0	100	100
33	d	193/195 (99%)	179 (93%)	12 (6%)	2 (1%)	15	54
34	e	162/164 (99%)	150 (93%)	12 (7%)	0	100	100
35	f	90/92 (98%)	87 (97%)	3 (3%)	0	100	100
36	g	147/149 (99%)	132 (90%)	15 (10%)	0	100	100
37	h	129/131 (98%)	109 (84%)	19 (15%)	1 (1%)	19	60
38	i	123/125 (98%)	111 (90%)	11 (9%)	1 (1%)	19	60
39	j	93/95 (98%)	85 (91%)	8 (9%)	0	100	100
40	k	112/114 (98%)	104 (93%)	8 (7%)	0	100	100
41	l	134/136 (98%)	115 (86%)	18 (13%)	1 (1%)	22	62
42	m	106/108 (98%)	95 (90%)	10 (9%)	1 (1%)	17	56
43	n	58/60 (97%)	50 (86%)	8 (14%)	0	100	100
44	o	83/85 (98%)	76 (92%)	7 (8%)	0	100	100
45	p	86/88 (98%)	77 (90%)	7 (8%)	2 (2%)	6	37
46	q	82/84 (98%)	73 (89%)	9 (11%)	0	100	100
47	r	62/64 (97%)	55 (89%)	6 (10%)	1 (2%)	9	45
48	s	76/78 (97%)	67 (88%)	9 (12%)	0	100	100
49	t	81/83 (98%)	74 (91%)	6 (7%)	1 (1%)	13	50
51	x	339/341 (99%)	292 (86%)	47 (14%)	0	100	100
All	All	5546/5640 (98%)	4959 (89%)	570 (10%)	17 (0%)	44	76

5 of 17 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
17	S	40	PRO
8	J	133	HIS
15	Q	93	LYS
45	p	47	ALA
49	t	69	LYS

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	C	220/220 (100%)	219 (100%)	1 (0%)	88	93
4	D	167/167 (100%)	166 (99%)	1 (1%)	86	92
5	E	169/169 (100%)	166 (98%)	3 (2%)	59	77
6	F	151/151 (100%)	146 (97%)	5 (3%)	38	61
7	G	148/148 (100%)	148 (100%)	0	100	100
8	J	120/120 (100%)	120 (100%)	0	100	100
9	K	101/101 (100%)	100 (99%)	1 (1%)	76	86
10	L	110/110 (100%)	109 (99%)	1 (1%)	78	87
11	M	109/109 (100%)	108 (99%)	1 (1%)	78	87
12	N	99/99 (100%)	99 (100%)	0	100	100
13	O	93/93 (100%)	91 (98%)	2 (2%)	52	71
14	P	100/100 (100%)	97 (97%)	3 (3%)	41	63
15	Q	96/96 (100%)	95 (99%)	1 (1%)	76	86
16	R	83/83 (100%)	82 (99%)	1 (1%)	71	84
17	S	90/90 (100%)	90 (100%)	0	100	100
18	T	81/81 (100%)	79 (98%)	2 (2%)	47	68
19	U	85/85 (100%)	85 (100%)	0	100	100
20	V	64/64 (100%)	62 (97%)	2 (3%)	40	63
21	W	47/47 (100%)	41 (87%)	6 (13%)	4	21
22	X	56/56 (100%)	56 (100%)	0	100	100
23	Y	52/52 (100%)	51 (98%)	1 (2%)	57	75
24	1	48/48 (100%)	46 (96%)	2 (4%)	30	55
25	2	46/46 (100%)	46 (100%)	0	100	100
26	3	39/39 (100%)	38 (97%)	1 (3%)	46	67
27	4	54/54 (100%)	54 (100%)	0	100	100
28	5	35/35 (100%)	35 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
29	Z	53/53 (100%)	53 (100%)	0	100	100
31	b	189/189 (100%)	183 (97%)	6 (3%)	39	62
32	c	168/168 (100%)	167 (99%)	1 (1%)	86	92
33	d	169/169 (100%)	165 (98%)	4 (2%)	49	69
34	e	128/128 (100%)	128 (100%)	0	100	100
35	f	81/81 (100%)	80 (99%)	1 (1%)	71	84
36	g	125/125 (100%)	123 (98%)	2 (2%)	62	79
37	h	111/111 (100%)	109 (98%)	2 (2%)	59	77
38	i	98/98 (100%)	94 (96%)	4 (4%)	30	56
39	j	86/86 (100%)	86 (100%)	0	100	100
40	k	86/86 (100%)	85 (99%)	1 (1%)	71	84
41	l	114/114 (100%)	113 (99%)	1 (1%)	78	87
42	m	94/94 (100%)	93 (99%)	1 (1%)	73	85
43	n	53/53 (100%)	52 (98%)	1 (2%)	57	75
44	o	80/80 (100%)	79 (99%)	1 (1%)	69	82
45	p	74/74 (100%)	73 (99%)	1 (1%)	67	81
46	q	77/77 (100%)	74 (96%)	3 (4%)	32	57
47	r	56/56 (100%)	54 (96%)	2 (4%)	35	60
48	s	70/70 (100%)	69 (99%)	1 (1%)	67	81
49	t	66/66 (100%)	65 (98%)	1 (2%)	65	80
51	x	307/307 (100%)	300 (98%)	7 (2%)	50	70
All	All	4748/4748 (100%)	4674 (98%)	74 (2%)	64	79

5 of 74 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
43	n	29	ARG
51	x	709	ASN
45	p	32	ARG
48	s	5	LEU
21	W	8	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 62 such sidechains are listed below:



Mol	Chain	Res	Type
16	R	45	ASN
44	o	46	HIS
24	1	40	HIS
44	o	42	HIS
51	x	518	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2876/2925 (98%)	976 (33%)	54 (1%)
2	B	111/112 (99%)	37 (33%)	3 (2%)
30	a	1532/1533 (99%)	420 (27%)	0
50	v	86/87 (98%)	20 (23%)	0
52	u	75/76 (98%)	32 (42%)	0
53	w	74/75 (98%)	27 (36%)	0
All	All	4754/4808 (98%)	1512 (31%)	57 (1%)

5 of 1512 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	8	U
1	A	10	A
1	A	13	A
1	A	20	C
1	A	29	U

5 of 57 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	1339	A
2	B	48	G
1	A	1631	A
2	B	37	A
1	A	2454	A

## 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	5

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	182:C	O3'	183:A	P	6.24
1	A	1449:C	O3'	1450:C	P	4.30
1	A	1452:C	O3'	1453:A	P	4.27
1	A	183:A	O3'	184:G	P	3.36
1	A	1451:U	O3'	1452:C	P	3.33

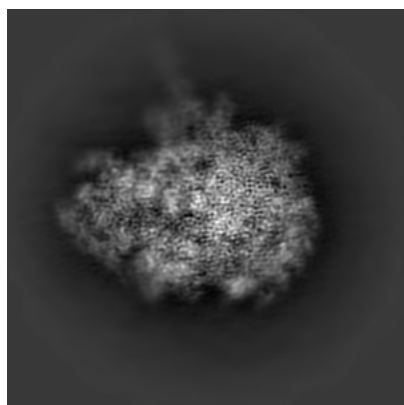
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0270. These allow visual inspection of the internal detail of the map and identification of artifacts.

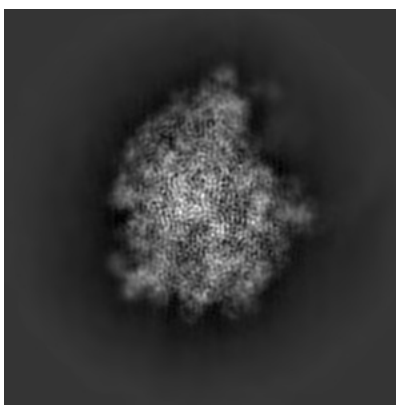
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

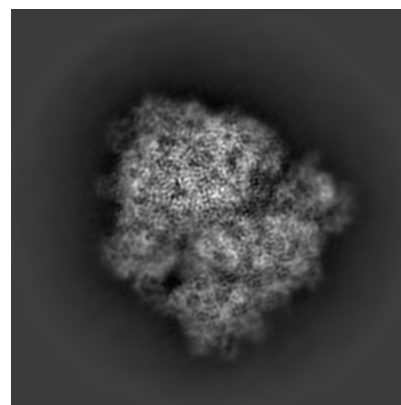
#### 6.1.1 Primary map



X



Y

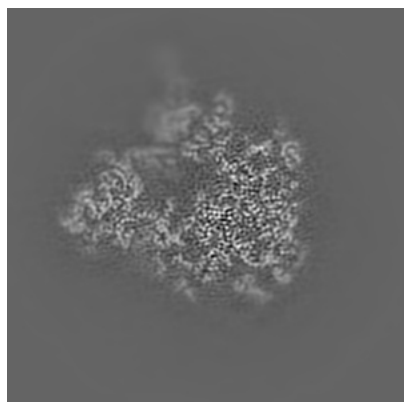


Z

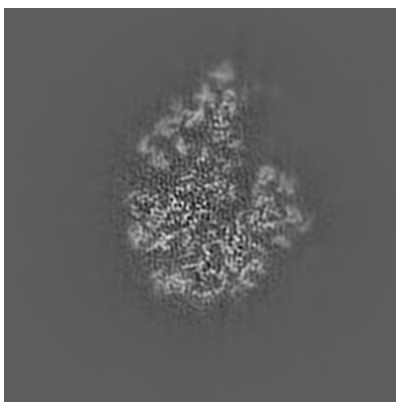
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

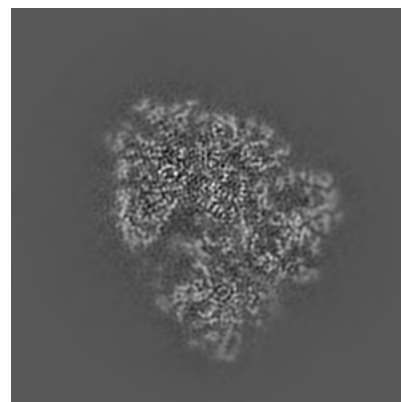
#### 6.2.1 Primary map



X Index: 180



Y Index: 180

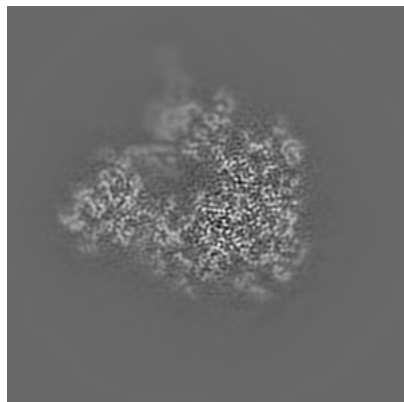


Z Index: 180

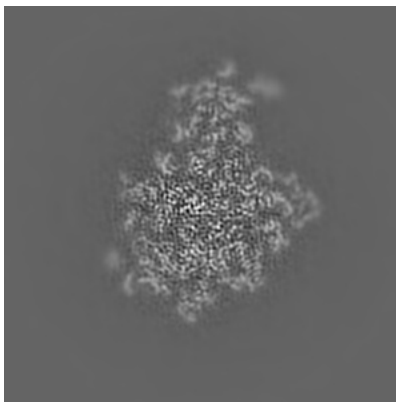
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

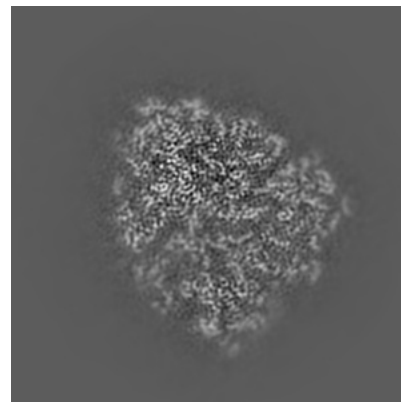
### 6.3.1 Primary map



X Index: 179



Y Index: 195

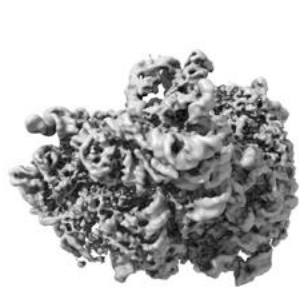


Z Index: 186

The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal surface views [i](#)

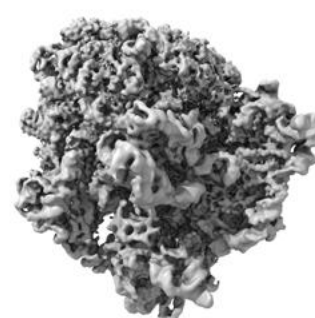
### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0471. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

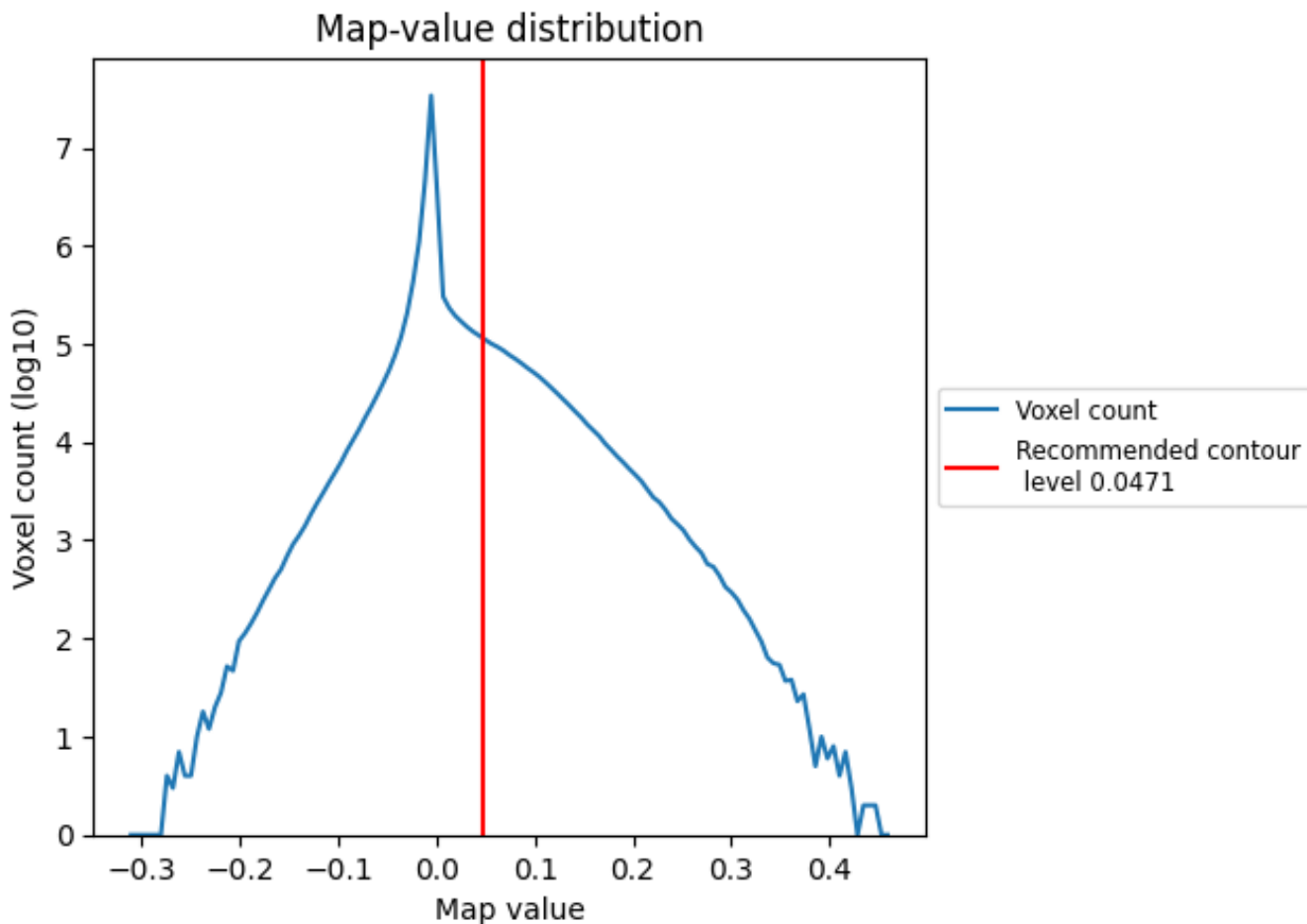
## 6.5 Mask visualisation

This section was not generated. No masks/segmentation were deposited.

## 7 Map analysis [i](#)

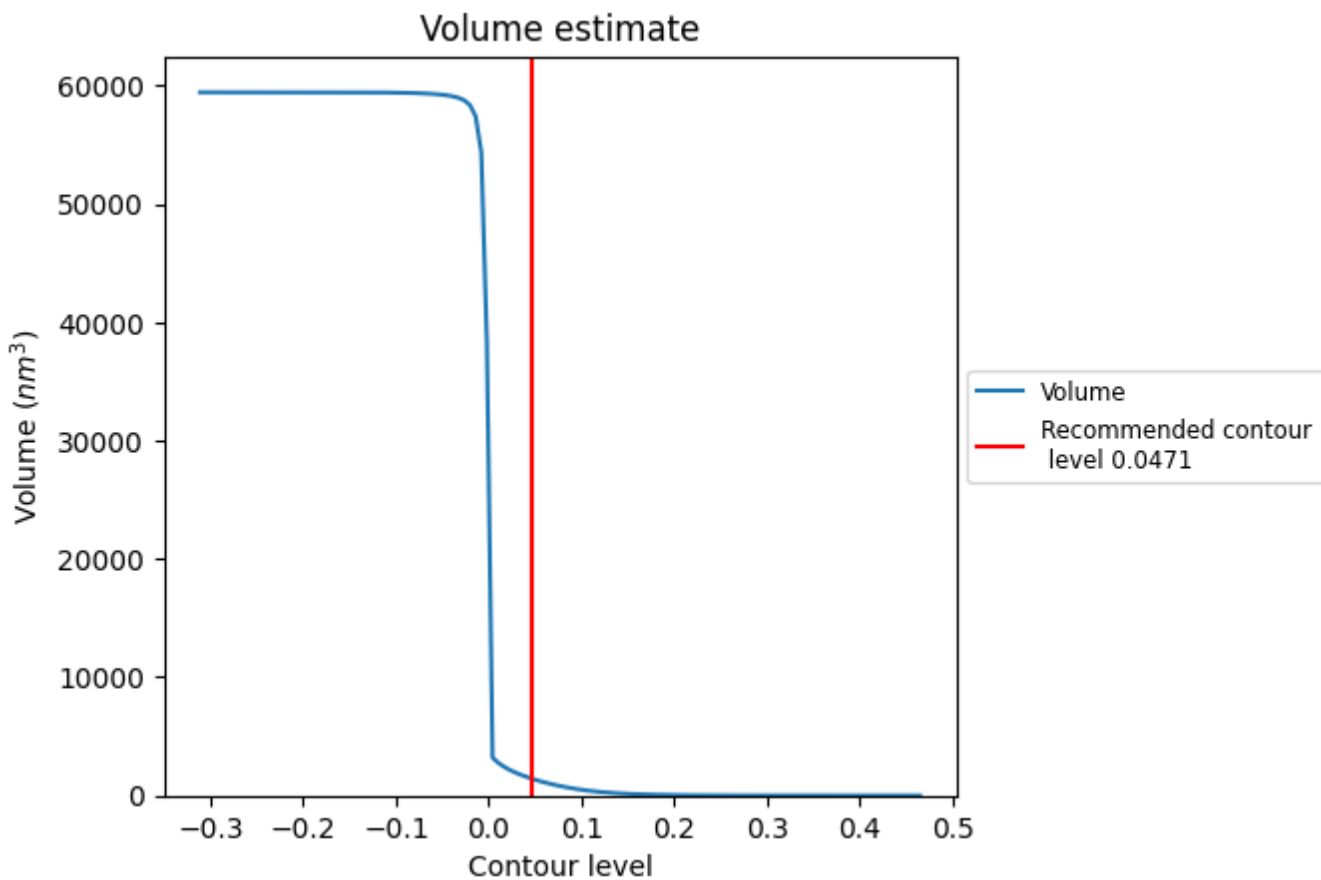
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

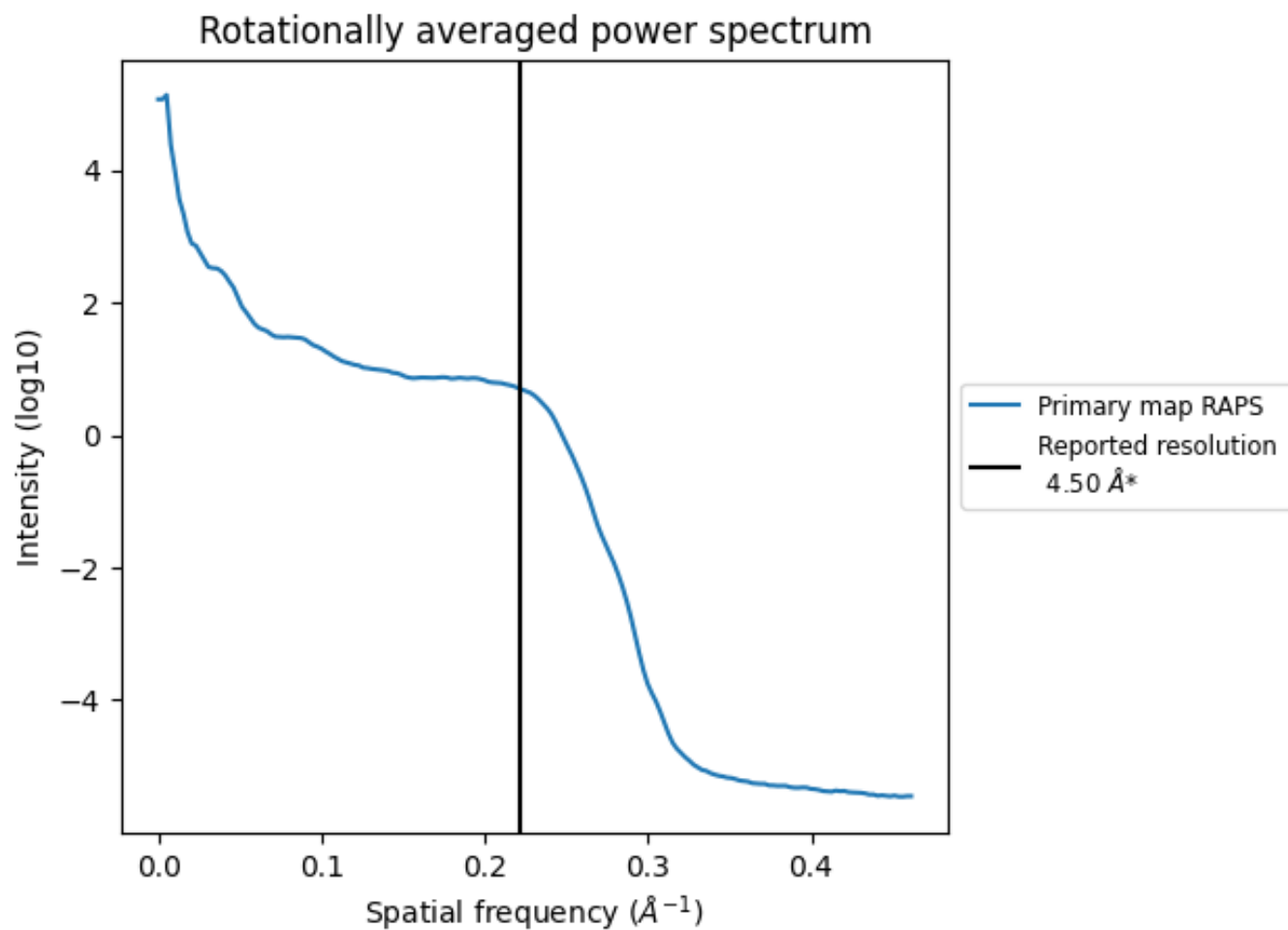
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1411 nm<sup>3</sup>; this corresponds to an approximate mass of 1274 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum i



\*Reported resolution corresponds to spatial frequency of 0.222 Å<sup>-1</sup>



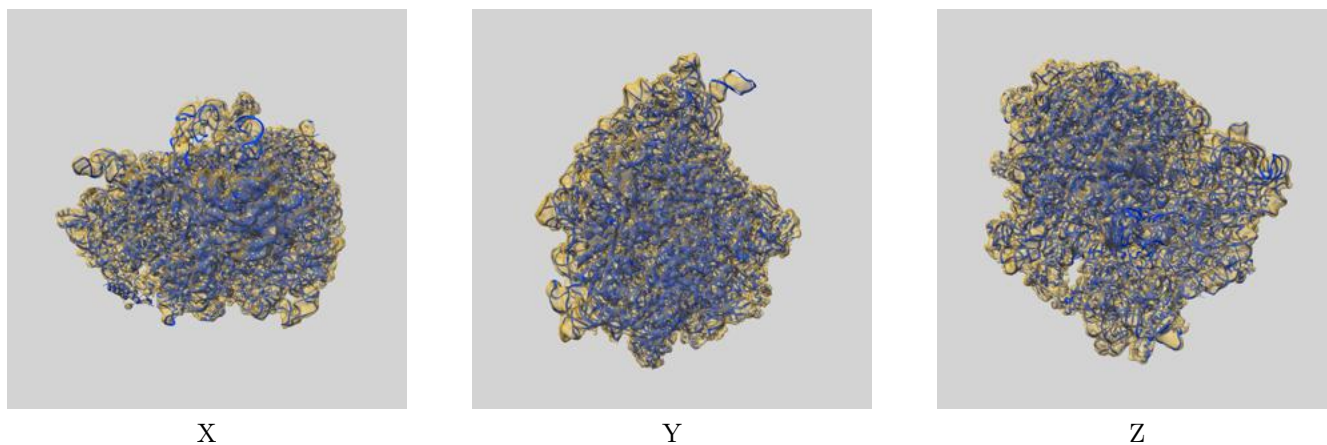
## 8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

## 9 Map-model fit [i](#)

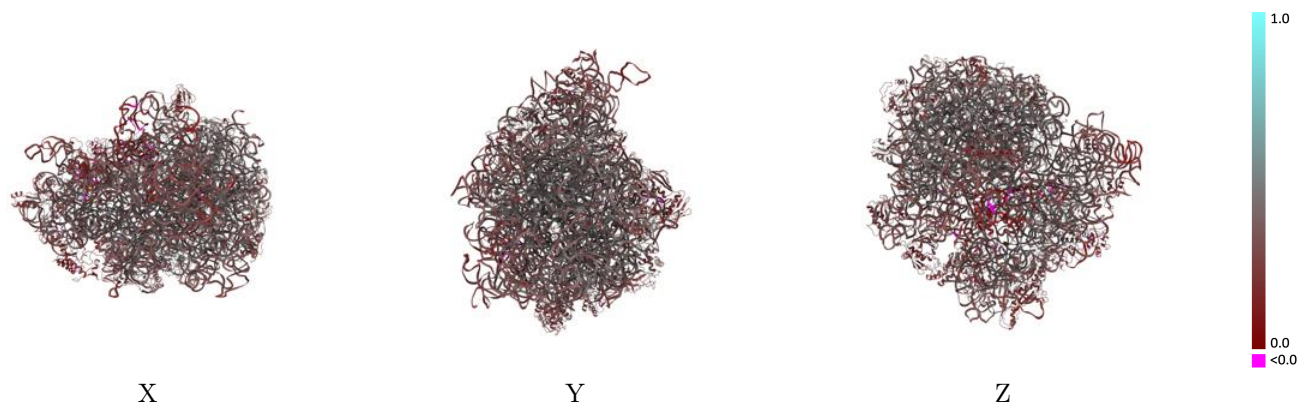
This section contains information regarding the fit between EMDB map EMD-0270 and PDB model 6HTQ. Per-residue inclusion information can be found in section [3](#) on page [13](#).

### 9.1 Map-model overlay [i](#)



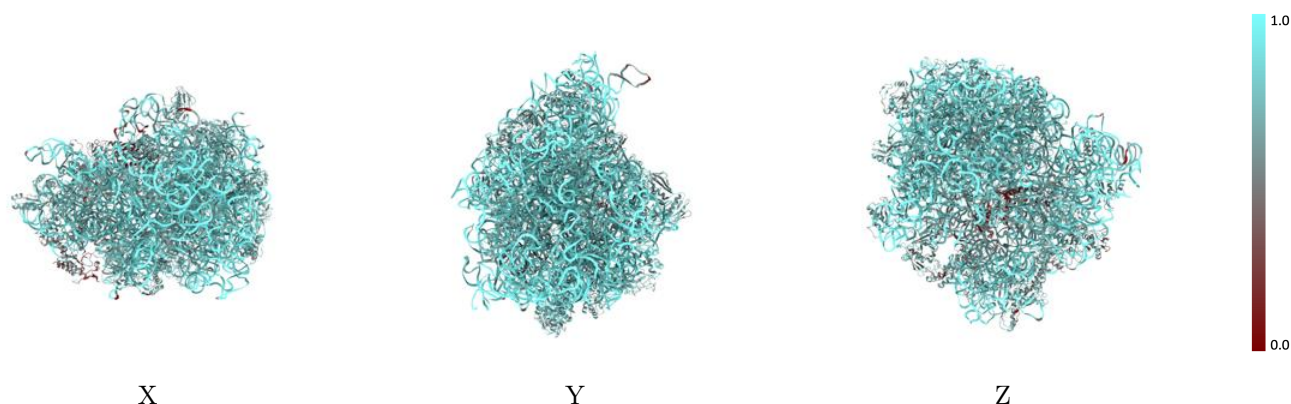
The images above show the 3D surface view of the map at the recommended contour level 0.0471 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



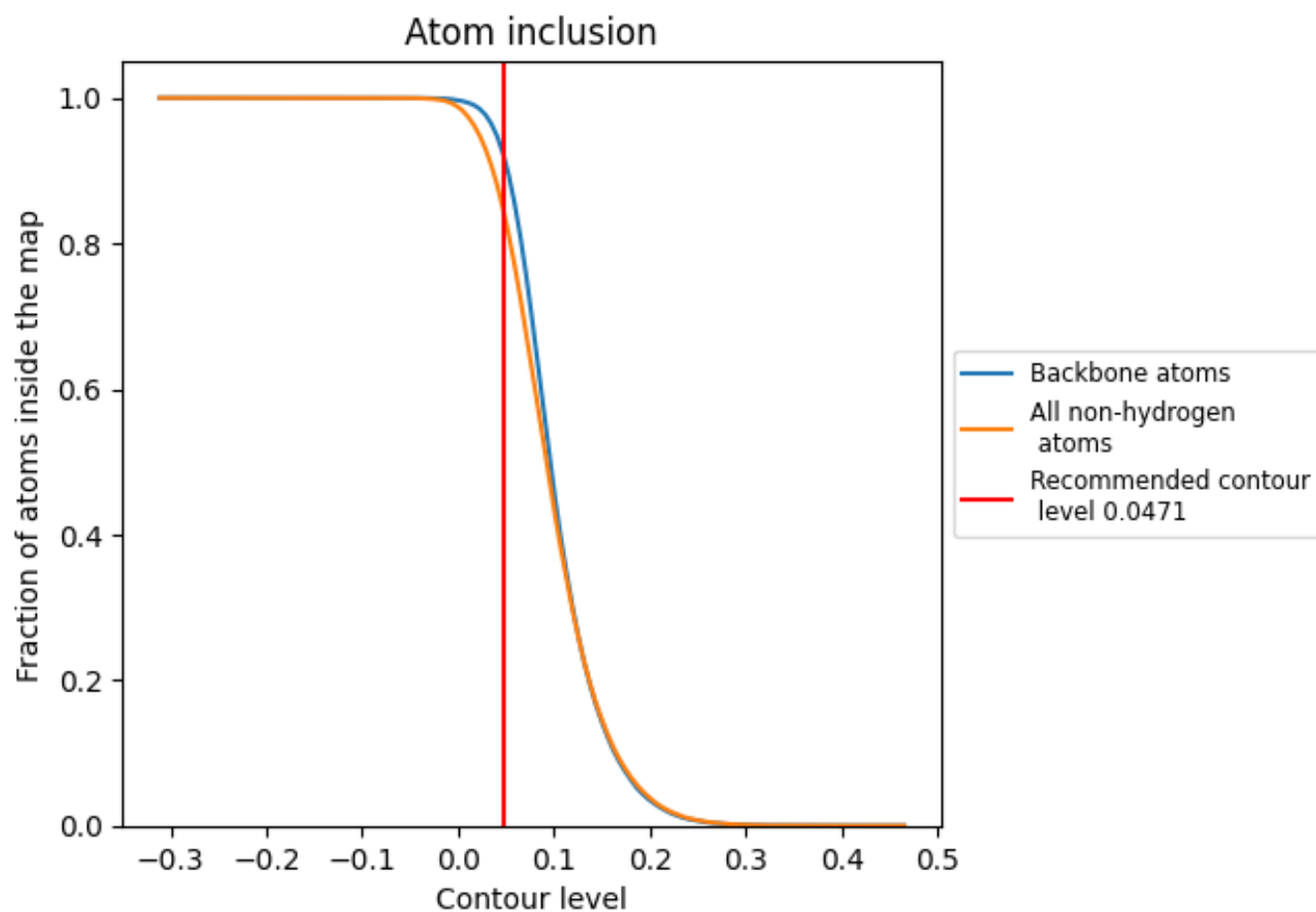
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0471).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 92% of all backbone atoms, 85% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary







































The table lists the average atom inclusion at the recommended contour level (0.0471) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8465	 0.3550
1	 0.8450	 0.4240
2	 0.7494	 0.3660
3	 0.8551	 0.4380
4	 0.7996	 0.4360
5	 0.7172	 0.3800
A	 0.9221	 0.3790
B	 0.9574	 0.3490
C	 0.7940	 0.4330
D	 0.7782	 0.4050
E	 0.7336	 0.3460
F	 0.6595	 0.2610
G	 0.6593	 0.2660
J	 0.7805	 0.3980
K	 0.7592	 0.4160
L	 0.7552	 0.3880
M	 0.7438	 0.3800
N	 0.7634	 0.3790
O	 0.7035	 0.2730
P	 0.7539	 0.4020
Q	 0.7943	 0.3940
R	 0.6920	 0.3380
S	 0.7656	 0.3940
T	 0.7188	 0.3430
U	 0.7046	 0.3110
V	 0.7635	 0.3870
W	 0.5949	 0.1450
X	 0.6693	 0.2590
Y	 0.7169	 0.3590
Z	 0.5828	 0.2530
a	 0.9305	 0.3620
b	 0.4159	 0.2330
c	 0.6803	 0.3170
d	 0.6220	 0.2600
e	 0.7211	 0.3720



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Chain	Atom inclusion	Q-score
f	 0.7065	 0.3340
g	 0.6800	 0.2890
h	 0.7302	 0.3540
i	 0.7175	 0.3110
j	 0.6730	 0.3070
k	 0.7062	 0.3240
l	 0.7120	 0.3800
m	 0.6851	 0.2850
n	 0.7312	 0.3650
o	 0.7209	 0.3140
p	 0.6962	 0.2910
q	 0.6449	 0.3110
r	 0.6793	 0.3250
s	 0.6736	 0.2810
t	 0.6833	 0.2700
u	 0.6987	 0.2190
v	 0.8399	 0.3330
w	 0.5291	 0.1910
x	 0.3802	 0.1860